Effects of Liming on Soil pH and Crop Yield

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Background

Liming of soils with low pH (4.0-6.0) has been shown to increase soil pH and crop yield due to increased nutrient availability.

Improved lime products such as SuperCal 98G has a claim of elevating soil pH at lower rates (e.g. 400 lbs/ac) compared to the higher rates of traditional agricultural lime (>1000 lbs/ac).

SuperCal 98G has an additional assertion of having a residual benefits for up to five years following application.

This trial was established to determine the effects of SuperCal 98G on soil pH and crop yield in canola and wheat.

This poster summarizes preliminary results in the year of application and the year following application.

Methodology

The study was set up as split-plot in a randomized complete block design with four replications.

The main plots were crops (canola and wheat) and subplots were the lime rates (0, 300, 400, 500, 600 and 700 lbs/ac).

The trial commenced in 2015 at Scott, Saskatchewan on a Dark brown soil with an initial pH of 5.6.

Data was collected on plant density, NDVI and yield. Economic assessment was done to determine the Return on Investment (ROI).

Results

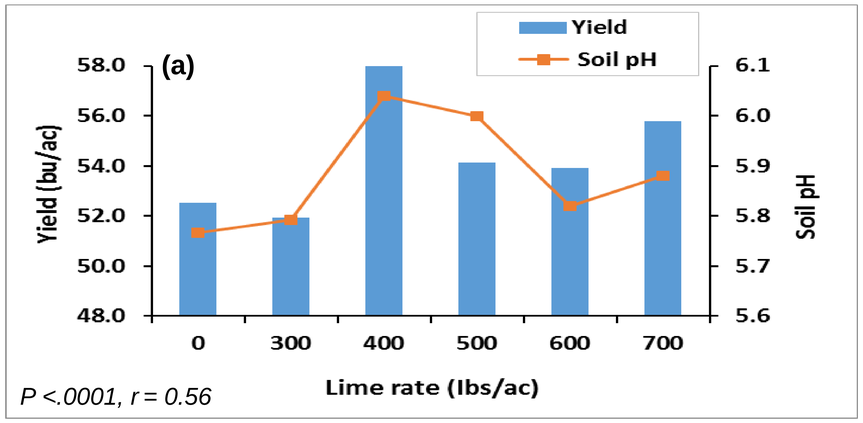

Figure 1: Correlation between yield and soil pH in Canola **(a)** and wheat **(b)**

Generally, there was no significant effect of liming on all response variables. There was consistent relative yield increase in the year after application.

There was the tendency of a higher ROI in years following application , especially in canola (Figure 2).

This may be due to crop physiology or critical pH range. Critical pH for canola (5.5-5.8) and wheat (5.1-5.4) or moisture availability (2015 vs. 2016).

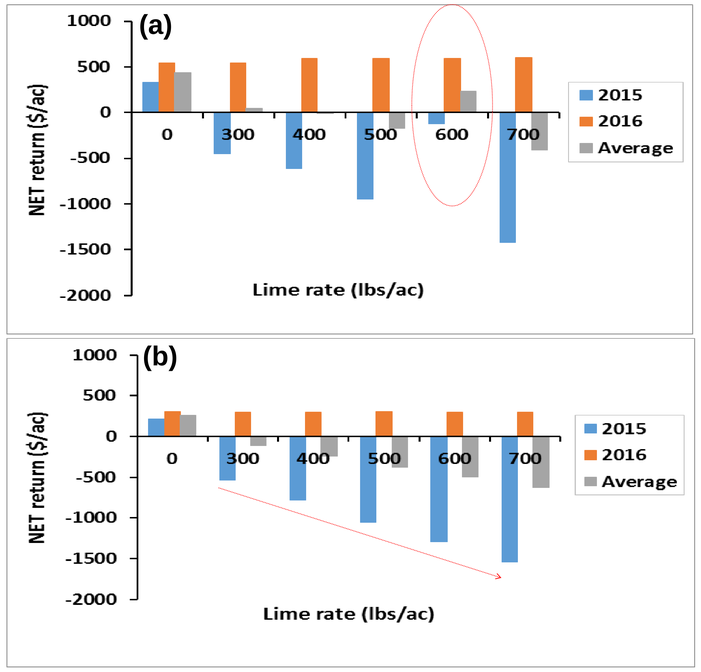

Figure 2: Net Economic return of liming on slightly acidic soils in Canola (**a**) and wheat (**b**) at Scott, SK

Preliminary Conclusions

Lime application is not economical in the year of application.

There is the tendency of yield increment in years following lime application.

Acknowledgements

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Reference

Lofton, J., C. B. Godsey, and H. Zhang.2010. Determining aluminum tolerance and critical soil pH for winter canola production for acidic soils in temperate regions. Agron. J. 102: 327–332.